April 18, 2012

SR-6J

Via Electronic Mail and Certified Mail
Return Receipt Requested

Lisa JN Bradley, Ph.D., DABT
Vice President and Senior Toxicologist
AECOM Environment
250 Apollo Drive
Chelmsford, Massachusetts 01824

RE: Pines Site, Pines, Porter County, Indiana
Administrative Order on Consent Docket No. V-W-04-C-784
Remedial Action Objectives

Dear Ms. Bradley:

Thank you for providing the Remedial Action Objectives Technical Memorandum dated January 2012. The RAO Technical Memorandum was submitted on behalf of the Northern Indiana Public Service Company, Brown, Inc., Ddalt Corp., and Bulk Transport Corp (Respondents). The U.S. Environmental Protection Agency has reviewed the RAO Technical Memorandum and its comments are enclosed with this letter. Respondents shall revise the Remedial Action Objectives in accordance with the EPA's comments and include the revised Remedial Action Objectives within the Alternatives Screening Technical Memorandum.

As discussed in greater detail in Task 7 of the Statement of Work, the Alternatives Screening Technical Memorandum shall present and summarize the development and screening of the remedial alternatives. It shall include descriptions of technologies that were eliminated from consideration and will provide the basis for their elimination. Preliminary screening will be based on permanence, effectiveness, implementability, and order of magnitude cost. The outcome of the alternatives screening will be a short list of alternatives which will undergo detailed analysis in the FS.

The Alternatives Screening Technical Memorandum shall identify and assess a limited number of alternatives appropriate for addressing the Remedial Action Objectives. The Alternatives Screening Technical Memorandum shall document the methods, the rationale and the results of the alternatives screening process. The Respondents shall incorporate the EPA's comments on the Alternatives Screening Technical Memorandum in the Feasibility Study Report.

Please submit the Alternatives Screening Technical Memorandum incorporating the enclosed comments no later than sixty days from the date of this letter.

If you have any questions regarding this matter, please contact me at (312) 886-4442 or ohl.matthew@epa.gov.

Sincerely,

Matthew J. Ohl
Remedial Project Manager

Enclosure

cc via e-mail: Mr. Paul Kysel, President of PINES
Mr. Mark Hutson, Geo-Hydro, Inc.
Mr. Charles Morris, National Park Service
Mr. Brenda Waters, National Park Service
Mr. Tim Thurlow, EPA-ORC
Ms. Janet Pope, EPA-CIC

Enclosure

TECHNICAL REVIEW COMMENTS ON TECHNICAL MEMORANDUM, REMEDIAL ACTION OBJECTIVES, PINES AREA OF INVESTIGATION, AOC II

The "Technical Memorandum, Remedial Action Objectives, Pines Area of Investigation, AOC II" (Remedial Action Objectives [RAO] technical memorandum), was prepared by AECOM for Brown, Inc., Ddalt Corp., Bulk Transport Corporation, and Northern Indiana Public Service Company (NIPSCO), and is dated January 2012. The RAO technical memorandum was reviewed for conformance with the Remedial Investigation (RI) dated March 2010, and the Human Health Risk Assessment (HHRA) and Screening Level Ecological Risk Assessment (SLERA), both dated December 2011, and relevant EPA and Indiana Department of Environmental Management (IDEM) risk assessment guidance.

General and specific technical review comments are presented below. The specific comments refer to particular sections, pages, paragraphs, appendixes, figures, and tables in the RAO technical memorandum. References cited in the technical review comments are listed immediately following the specific comments.

GENERAL COMMENTS

1. The RAO technical memorandum was submitted to the EPA before EPA's technical review comments on the HHRA and SERA, both dated December 2011, and including specific modifications, had been prepared. The Alternatives Screening Technical Memorandum must be drafted to incorporate these comments and the modifications to both the HHRA and SERA. Issues related to several of the more significant technical review comments on the HHRA and SERA are expressed below in the general and specific comments.

2. As discussed in Section 2.2.1, a visual inspection program was developed and conducted as part of the RI. The HHRA used the results of this program to quantify the maximum average percent of coal combustion by-products (CCB) at the ground surface as 27 percent. However, the results of the visual inspection program have not been verified through laboratory analysis. The uncertainty associated with the use of HHRA risks and hazards using the 27 percent CCB scenario based on unverified visual inspection program results should be identified and discussed.

3. A variety of editorial errors, omissions, and inconsistencies were identified. Examples (but not a thorough and complete list) are listed below. The RAO technical memorandum should be carefully reviewed and all editorial errors, omissions, and inconsistencies corrected.

    - Acronyms and abbreviations (A&A): (1) Several A&A were not spelled out at the location of their first use. Examples include: mg/L, ERA, RI, and UMTRCA. All A&A should be spelled out at the location of their first use. (2) Several standard chemical abbreviations were used in the text, but not included on the list on page vii. Examples include: S, Si, HCO_3, Cl, and NO_3. All standard chemical abbreviations used in the RAO technical memorandum should be identified.

- The third paragraph of Section 3.2.2 includes discussion of the terms "criterion maximum concentration:" and "secondary maximum concentration" with their corresponding acronyms. The acronyms for both of these terms are missing the closing parentheses.

SPECIFIC COMMENTS

1. **Section 2.2.1, Page 2-3, Paragraphs 3 and 4.** Section 2.2.1 summarizes the results of the CCB visual inspections. As noted in General Comment 2, the visual inspection program results have not been verified through laboratory analysis and, therefore, are associated with uncertainty and must be interpreted cautiously.

   Also, the text states that "there have been no reports of areas of CCBs being present within the Area of Investigation that have not already been identified, and the identified areas coincide with historical information discussed in the Site Management Strategy document." This statement is not accurate. It would be more accurate to state that "it is clear, based on historical evidence and visual inspection, that CCBs were used as fill only in a subset of the Area of Investigation." As discussed in Section 3.1.1 of the HHRA, CCBs (in the form of fly ash and bottom ash) were identified in 3 of 5 background soil samples (60 percent) in portions of the Area of Investigation where CCBs had not been known to be deposited. It is expected that the presence of CCBs in these non-depositional areas is the result of secondary fate-and-transport processes such as fugitive dust emissions and secondary deposition, surface water runoff, and erosion. However, the concentration of CCBs is expected to be lower in any areas of secondary deposition or transport. Although CCBs were used as fill in only a subset of the Area of Investigation, CCBs may have been transported elsewhere in the Area of Investigation through secondary fate-and-transport processes.

2. **Section 2.2.2, Page 2-4, Paragraph 1.** Section 2.2.2 discusses the chemistry of background soil. The detection of CCBs (in the form of fly ash and bottom ash) at concentrations of up to 1 percent in 60 percent of the background soil samples tested should be discussed. The presence of even low levels of CCBs in the majority of the background soil samples that were analyzed for the presence of CCBs limits the usefulness of the existing background soil data set. Therefore, the results of any comparisons of chemical of potential concern- (COPC) specific concentrations and associated risks and hazards to site-related COPC-specific concentrations, risks, and hazards must be interpreted cautiously. Finally, additional background soil samples may be collected in subsequent project phases if necessary to support the remedial design/remedial action. After verification through laboratory analysis of the absence of CCBs, background soil COPC-specific concentrations, risks, and hazards may be recalculated. This possibility and the use of these updated background soil results in revising current RAOs and for creating new RAOs as necessary should be discussed.

3. **Section 2.2.4 Page 2-5, Paragraph 5 and Figure 10.** The text states that "CCB-derived constituents in groundwater do not extend northward into IDNL [Indiana Dunes National Lakeshore] at levels of significance." However, neither this RAO technical memorandum nor the RI report includes information supporting this statement. In addition, as Figure 10 shows, the current outline of the suspected groundwater plume has moved away from the source area at Yard 520, which suggests that the plume may continue to move offsite.

4. **Section 2.2.4 Page 2-6, Paragraph 8.** The text states that "overall, there has been no significant change in groundwater levels or hydraulic gradients since completion of the RI field work." However the RAO technical memorandum only includes one figure showing the boron concentrations in wells located to the north of Yard 520 and the technical memorandum does not include post-RI data for wells located on Yard 520 or in the easterly direction from Yard 520. Post-RI groundwater COPC concentrations in wells located on Yard 520 and downgradient of Yard 520 and other fill areas, should be discussed. In addition, an additional RAO to address the spread of CCBs-impacted groundwater beyond Yard 520 and other fill areas should be added.

5. **Section 2.3.3, Page 2-10, Paragraph 3.** Section 2.3.3 summarizes the exposure assessment from the HHRA. The first bulleted item summarizes exposure pathways and assumptions for residential receptors. The last sentence of the paragraph states that the drinking-water pathway is the only potentially complete exposure pathway for receptors using the groundwater as a drinking-water source. This statement is not correct. Residential receptors engaged in recreational activities may be directly exposed to groundwater through seeps and sediments, and indirectly through exposure to surface water that has been impacted by groundwater or seeps. These additional potential direct and indirect groundwater exposure pathways, including any post-RI groundwater, surface water, seep and sediment data should be discussed.

6. **Section 2.3.4, Pages 2-11 and 2-12.** Section 2.3.4 introduces the risk characterization results from the HHRA. Paragraph two of this section identifies a constituent of concern (COC) as any COPC "that causes an exceedance of the 10-4 risk level for a particular receptor." In support of this position, Section 2.3.4 presents two quotes from the EPA's guidance document entitled "Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions" (EPA 1991). This guidance document also states the following: "A risk manager may also decide that a baseline risk level less than 1E-04 is unacceptable due to site-specific reasons and that remedial action is warranted." This part of the guidance must also be considered because the Area of Investigation encompasses a residential area. Also, the EPA typically identifies the low end of EPA's risk range of 1E-06 to 1E-04 (EPA 1990) as a "point of departure." In other words, all COPCs with risks greater than or equal to 1E-06 (as well as non-carcinogenic hazards greater than 1 as stated in Section 2.3.4) should be identified as COCs. This will allow risk managers to judge whether risks greater than or equal to 1E-06, but less than or equal to 1E-04, require remediation.

7. **Section 2.3.4, Page 2-13, Paragraphs 4 and 5.** The subject paragraphs present the comparison of risks for background and CCB scenarios. Two significant problems were identified in this discussion. The first relates to the limited usefulness of any comparisons of background soil results to CCB scenarios, given the identification of CCBs in 60 percent of the background soil samples tested for CCBs. The uncertainties associated with the results of any such comparison should be discussed.

   Second, any comparison between a single data set (based on CCB samples from the municipal water service extension [MWSE]) and background results does not account for the variability within individual properties from the Area of Investigation. In other words, the

simplified comparison of MWSE CCB results to background soil results does not exclude the possibility of elevated concentrations of CCB-related COPCs at individual properties. If any of the individual properties contain CCB-related COPC concentrations greater than background and associated with risks greater than or equal to 1E-06 and/or hazards greater than 1 (COCs), then an RAO will be required to address these risks and hazards.

8. **Section 2.3.5, Page 2-16, Paragraphs 1 and 2.** Section 2.3.5 presents a summary of the conclusions of the HHRA. As discussed in Specific Comment 6, a COPC associated with a risk greater than or equal to 1E-06 and/or a hazard greater than 1 for any receptor should be defined as a COC and risks and hazards for all COCs should be discussed.

9. **Section 2.4.4. Page 2-20, Paragraphs 2 and 3.** Section 2.4.4 presents a summary of the conclusions of the SERA. As discussed in General Comment 1, these conclusions must address the comments provided by the EPA for the SERA.

10. **Section 3.2.1, Pages 3-2 to 3-4, Paragraph 1.** Section 3.2.1 does not include the Regional Screening Level (RSL) tap-water values as criteria to be considered (TBC). Criteria TBC are not potential applicable or relevant and appropriate requirements (ARARs) because they are not enforceable; however, it may be necessary to consult TBCs when defining remediation goals if ARARs do not exist for potential COPCs. The RSL tap-water values as criteria TBC should be included, along with the ARARs, which are based on Maximum Contaminant Levels (MCLs).

11. **Section 3.2.3, Page 3-5, Paragraph 1.** Section 3.2.3 states that the State of Indiana's Risk Integrated System of Closure (RISC) program "was ultimately not deemed an ARAR." It is recognized that RISC provides soil screening levels and "is considered by Indiana as a non-rule policy document, which means it does not have the full force and effect of the law"; however, it is recommended that RISC be included as a TBC.

12. **Section 3.3, Page 3-5, Paragraph 1.** Preliminary location-specific ARARs should be identified.

13. **Section 4.0, Pages 4-1 and 4-2.** Section 4.0 presents the RAOs proposed for the Area of Investigation. RAOs 1 and 2 propose preventing future use of groundwater for drinking water in the wetland areas in the vicinity of MW111 and MW122 and in the MWSE area, respectively. RAOs should also include the reduction of the potential sources of groundwater contamination, which include the areas of significant CCB deposition. RAO 1 should be modified as follows: "Reduce the volume, toxicity, and/or mobility of CCBs in the areas represented by those wells identified with risks greater than or equal to 1E-06, including, but not limited to MW6, MW8, TW15D, MW104, MW111, and MW122, and hazards greater than 1 including, but not limited to MW3, MW6, MW8, TW10, TW12, TW15D, TW16D, TW18D, MW106, MW111, and MW122."

    Also, as noted in Specific Comment 7, the HHRA considered a single data set as representative of the CCB scenario. As presented in Table 1 of the RAO technical memorandum, the risks associated with the CCB scenario appear to be similar to those posed by background. (Note: this conclusion must be interpreted cautiously due to the limited

usefulness of the current background soil data set). Nonetheless, use of a single data set does not consider the potential variability of risks and hazards at individual properties. In other words, the simplified comparison of MWSE CCB results to background soil results does not exclude the possibility of elevated concentrations of CCB-related COPCs at individual properties. If any of the individual properties contain CCB-related COPC concentrations associated with risks greater than or equal to 1E-06 and/or hazards greater than 1 (COCs), then one or more RAOs will be required to address these risks and hazards. Therefore, the following RAO should be included as RAO 4. "Reduce or eliminate exposure to contamination at any of the individual properties that are determined to contain COPC concentrations greater than background and associated with risks greater than or equal to 1E-06 and/or hazards greater than 1."

In addition, RAO 2 should be modified to prohibit the installation of any private wells that may result in unacceptable risk, irrespective of their use or location. RAO 2 should be modified as follows: "Prevent the installation of private wells and any use of groundwater in all areas where COPC concentrations are associated with risks greater than or equal to 1E-06 and/or hazards greater than 1."

RAO 3 should be modified to include detected groundwater concentrations that may pose a risk to any ecological or human receptors. The SERA identified potential risks in both surface water and sediments because the media concentrations for a number of constituents were found to be above those screening values based on the "no observed adverse effect level" and at or slightly above the screening values based on "lowest observed adverse effect level." Because of this situation and the concern for the potential for groundwater contaminants to pose a continuing contaminant source to both sediments and surface water, the RAO 3 should be modified as follows: "Provide for the long-term protection of the Indiana Dunes National Lakeshore from groundwater, surface water and sediment contamination originating in Area of Investigation."

Groundwater in the surficial aquifer is highly vulnerable to contamination, as it is unconfined at or near the surface and is made up of materials having high transmissivities. The groundwater also discharges either directly or indirectly through drainage ditches to the Great Marsh and/or other wetlands managed for ecological purposes on federal lands. Specifically, such discharges occur within the Indiana Dunes National Lakeshore managed by the National Park Service. Therefore, the groundwater in the surficial aquifer is ecologically vital. The aquifer is also the same aquifer that is currently used as a drinking water source by nearby residents. The following RAOs should be included. RAO 5 should be included as follows: "Restore ground water to achieve and maintain Federal and State drinking water standards, protective levels (corresponding to a 1x10-6 cancer risk for carcinogens or a hazard index of 1 for non-carcinogens) and ambient water quality criteria, whichever are more stringent, within a time frame that is reasonable considering practicable response action alternatives." RAO 6 should be included as follows: "Monitor ground water upgradient and downgradient of the Yard 520 and other disposal/fill areas to ensure that the potential beneficial uses of ground water (drinking and discharge to surface water) are met by achieving and maintaining Federal and State drinking water standards, protective levels (corresponding to a 1x10-6 cancer risk for carcinogens or a hazard index of 1 for non-carcinogens) and ambient water

quality criteria, whichever are more stringent, at the waste management boundary of Yard 520 and other disposal/fill areas."

14. **Table 1.** Table 1 presents a summary of potential human health risks for non-drinking-water pathways under reasonable maximum exposure (RME) scenarios. Several comments are presented below.

    - The table notes state, "Blue text indicates a total potential risk value above background." Foremost, this statement doesn't reflect the uncertainty associated with any comparison to a background soil data set that has been compromised due to the presence of low concentrations of CCBs in over half of the samples tested. Second, while the overall risks and hazards associated with the CCB data set do not appear to exceed background results, the use of a single data set to represent multiple individual properties does not account for the variability of risks and hazards for resident receptors at individual properties. Consistent with Specific Comment 7, Table 1 should include a note that discusses the potential for individual properties to contain CCB-related COPC concentrations associated with risks greater than or equal to 1E-06 and/or hazards greater than 1. Finally, background risks and hazards are highlighted in blue font. None of the background results should be in blue font because background results cannot by definition exceed themselves.

    - For the resident receptor, suspected CCBs and Brown Ditch, 100 percent CCB scenario, the hazard based on the target endpoint of hair should be 1.78 (thallium and vanadium), not 1.65 (thallium) – this comment applies also to Pond 1 and Pond 2 rows on Table 1.

    - Table 1 should identify the HHRA table from which the receptor-specific risks and hazards were extracted. For example, the risks and hazards for the recreational child were extracted from HHRA Tables 6-9 and 6-10. Adding another column would work well.

15. **Table 2.** Table 2 presents a summary of potential groundwater risks. Several comments are presented below.

    - Carcinogenic risks are presented in multiple columns. Each carcinogenic risk should appear in only one column (the one associated with the highest risk level). For example, for the "Groundwater – Yard 520" results, MW6 with arsenic as a COC is identified under all three columns. MW6 should be removed from the 10-5 and 10-6 columns.

    - For Groundwater – Yard 520 results, the non-carcinogenic hazard for MW6 should identify arsenic (As) in addition to boron (B) as a hazard driver. Also, the table should clarify whether well TW10 is the same as MW10.

    - For Groundwater – served by MWSE (excluding Yard 520), the non-carcinogenic hazards should be revised to add TW15D with arsenic as a hazard driver.

- For Groundwater – outside MWSE, the non-carcinogenic hazard for MW111 should be revised to add thallium (Tl) as a risk driver. Similarly, the non-carcinogenic hazard for MW122 should be revised to add arsenic (As) as a hazard driver.

- The table should identify the HHRA table from which the receptor-specific risks and hazards were extracted. For example, the risks and hazards for the recreational child were extracted from HHRA Tables 6-9 and 6-10. Adding another column would work well.

16. **Figure 9.** This figure presents the boron concentrations in groundwater; however, the figure does not include the dates when the samples were collected or whether the results depict the maximum, average, or minimum concentrations detected. The figure should reflect the sample date(s) for each location and whether the results represent the maximum, average, minimum, or other concentrations detected.

17. **Figure 10.** This figure shows a small area of cumulative risk exceeding 1E-04 around MW111. The area of cumulative risk near MW111 is shown as only extending around the well location and not beyond. The RI notes that this well is located in an area of known CCBs, which were measured to be 5 feet thick within MW111. To be conservative, the figure should show the area of cumulative risk extending halfway to the next area with risk less than 1E-06, or the area should encompass the "approximate area of suspected CCB[s]" as shown on Figure 8.

REFERENCES

U.S. Environmental Protection Agency (EPA). 1990. "National Oil and Hazardous Substances Pollution Contingency Plan." *Federal Register*. Volume 55, Number 46. April 9.

EPA. 1991. "Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions." Office of Solid Waste and Emergency Response (OSWER) Directive 9355.0-30. April.